What is claimed is:

1. A high strength and low shrinkage polyester yarn, which has tenacity of 7.4 g/d or higher, elongation at break of 19 to 26 %, shrinkage percentage of 2 % or lower, and respective thermal-stress peaks of 3×10^{-2} to 7.5×10^{-2} g/d and 8.0×10^{-2} to 10.5×10^{-2} g/d at temperature ranges of 100 to 140℃ and 230 to 240℃.

2. The high strength and low shrinkage polyester yarn as set forth in claim 1, wherein a ratio of a yarn's thermal-stress peak at a temperature range of 230 to 240℃ to a thermal-stress peak at a temperature range of 100 to 140℃ is 1.3 to 3.0.

3. The high strength and low shrinkage polyester yarn as set forth in claim 1, wherein a shrinkage force of the polyester yarn within a first 5 sec after the start of shrinkage is 4.5×10^{-2} to 6.5×10^{-2} cN/d, and the shrinkage force of the polyester yarn thereafter is 1.5×10^{-2} to 3.5×10^{-2} cN/d.

4. The process for preparing a high strength and low shrinkage polyester yarn by the direct spinning drawing process, comprising:

(a) spinning a melted polyester polymer at a speed of 383 to 490 m/min;

(b) drawing a spun polyester yarn in a total draw ratio of 5 to 6.4; and

(c) relaxing a drawn polyester yarn at 230 to 250℃ by a godet roller with a relaxation ratio of 9 to 13 %.

5. The process according to claim 4, wherein the relaxation is performed through a first relaxation step and a second relaxation step, and a relaxation distribution ratio of the first relaxation step to the second relaxation step is 9:1 to 1:9.